IN THE CLAIMS:

Please CANCEL claims 1, 7, 11, 14, 37 and 43, without prejudice or disclaimer.
Please AMEND the claims as indicated below:

1. (CANCELED)

2. (CURRENTLY AMENDED) A method comprising:~~according to claim 1~~
inputting a signal light to an optical regenerator;
shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light; and
controlling a power level of the signal light input to the optical regenerator so that a quality measurement of the signal light output by the optical regenerator is improved, the quality measurement being one of a Q factor, a bit error rate, a spectrum shape and an eye opening, wherein said controlling comprises
optically amplifying the signal light with an optical amplifier before being input to the optical regenerator, and
adjusting gain of the optical amplifier to thereby control the power level of the signal light input to the optical regenerator.

3. (CANCELED)
4. (CANCELED)
5. (CANCELED)
6. (CANCELED)
7. (CANCELED)

8. (CURRENTLY AMENDED) A device ~~according to claim 7,~~comprising:
an optical regenerator inputting a signal light and shaping a waveform of the input signal light to thereby output a shaped signal light; and
a power controller controlling a power level of the signal light before the signal light is input to the optical regenerator so that a quality measurement of the signal light output by the optical regenerator is improved, the quality measurement being one of a Q factor, a bit error rate, a spectrum shape and an eye opening, wherein said power controller comprises an optical amplifier amplifying the signal light before being input to the optical regenerator, and a controller adjusting gain of the optical amplifier to thereby control the power level of the signal light.

9. (CURRENTLY AMENDED) A device ~~according to claim 7,~~comprising:

an optical regenerator inputting a signal light and shaping a waveform of the input signal light to thereby output a shaped signal light; and

a power controller controlling a power level of the signal light before the signal light is input to the optical regenerator so that a quality measurement of the signal light output by the optical regenerator is improved, the quality measurement being one of a Q factor, a bit error rate, a spectrum shape and an eye opening, wherein said power controller comprises an optical amplifier amplifying the signal light before being input to the optical regenerator, an optical attenuator attenuating the amplified signal light before being input to the optical regenerator, and a controller adjusting attenuation of the optical attenuator to thereby control the power level of the signal light.

10. (CURRENTLY AMENDED) A method comprising:

providing an optical regenerator having a variable threshold for waveform shaping input signal light according to said variable threshold and thereby outputting waveform shaped signal light, the optical regenerator comprising a semiconductor optical amplifier (SOA), and the threshold being variable by changing an injection current of the SOA;

measuring quality of said output signal light; and

controlling said variable threshold by controlling the injection current in accordance with the measured quality so that the measured quality is improved.

11. (CANCELED)

12. (WITHDRAWN - CURRENTLY AMENDED) A method ~~according to claim 10, wherein~~comprising:

providing an optical regenerator having a variable threshold for waveform shaping input signal light according to said variable threshold and thereby outputting waveform shaped signal light;

measuring quality of said output signal light; and

controlling said variable threshold in accordance with the measured quality so that the measured quality is improved, wherein

said optical regenerator comprises a distributed feedback laser diode adapted to change said variable threshold according to the power of assist light supplied thereto; and

said controlling comprises adjusting the power of said assist light.

13. (CURRENTLY AMENDED) A device comprising:

an optical regenerator having a variable threshold for waveform shaping input signal light according to said variable threshold and outputting output signal light, the optical regenerator comprising a semiconductor optical amplifier (SOA), and the threshold being variable by changing an injection current of the SOA;

means for measuring the quality of said output signal light; and

a controller controlling said variable threshold by controlling the injection current in accordance with the measured quality so that the measured quality is improved.

14. (CANCELED)

15. (WITHDRAWN - CURRENTLY AMENDED) A device ~~according to claim 13, wherein~~ comprising:

an optical regenerator having a variable threshold for waveform shaping input signal light according to said variable threshold and outputting output signal light;

means for measuring the quality of said output signal light; and

a controller controlling said variable threshold in accordance with the measured quality so that the measured quality is improved, wherein

said optical regenerator comprises a distributed feedback laser diode adapted to change said variable threshold according to the power of assist light supplied thereto, and a light source for outputting said assist light; and

said controller adjusts the power of said assist light.

16. (CURRENTLY AMENDED) The method of claim ~~1~~2, wherein the signal light is a wavelength division multiplexed signal.

17. (CURRENTLY AMENDED) A method comprising:

inputting signal light to an input of an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring a Q factor of said output signal light; and

controlling a power level of the signal light at the input ~~to~~ of the optical regenerator by an

optical amplifier or optical attenuator positioned at the input of the optical regenerator, the power level being controlled in accordance with the measured Q factor to improve the measured Q factor.

18. (CURRENTLY AMENDED) A method comprising:

inputting a signal light to an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring a bit error rate of said output signal light; and

controlling a power level of the ~~input~~ signal light before being input to the optical regenerator in accordance with the measured bit error rate to improve the measured bit error rate.

19. (PREVIOUSLY PRESENTED) A method comprising:

inputting signal light to an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring a spectrum shape of said output signal light; and

controlling the power of said input signal light in accordance with the measured spectrum shape to improve the measured spectrum shape.

20. (CURRENTLY AMENDED) A method comprising:

inputting a signal light to an optical regenerator;

shaping of waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring an eye opening of said output signal light; and

controlling a power level of said ~~input~~ signal light before being input to the optical regenerator in accordance with the measured eye opening to improve the measured eye opening.

21. (CURRENTLY AMENDED) An optical repeater comprising:

an amplifier that amplifies a first signal to produce a second signal;

an attenuator that attenuates the second signal to produce a third signal;

an optical regenerator that shapes a waveform of the third signal to produce a fourth

signal;

a quality monitor that measures a quality of the fourth signal; and

a controller that controls the attenuator to change a power level of the ~~second~~ third signal in accordance with the measured quality to thereby improve the measured quality of the fourth signal, wherein the first, second, third and fourth signals are optical signals.

22. (CURRENTLY AMENDED) A device comprising:

means for amplifying a first signal to produce a second signal;

means for attenuating the second signal to produce a third signal;

means for shaping a waveform of the third signal by an optical regenerator to produce a fourth signal;

means for monitoring a quality of the fourth signal; and

means for controlling the attenuation by said means for attenuating in accordance with the monitored quality to change a power level of the ~~second~~ third signal and thereby improve the monitored quality of the fourth signal, wherein the first, second, third and fourth signals are optical signals.

23. (CURRENTLY AMENDED) An apparatus comprising:

an optical regenerator inputting a signal light at an input of the optical regenerator and shaping a waveform of the input signal light to thereby output a shaped signal light;

means for measuring a Q factor of said output signal light; and

means for controlling a power level of said ~~input~~ signal light at the input of the optical regenerator by an optical amplifier or optical attenuator positioned at the input of the optical regenerator, the power level being controlled in accordance with the measured Q factor to improve the measured Q factor.

24. (CURRENTLY AMENDED) An apparatus comprising:

an optical regenerator inputting a signal light and shaping a waveform of the input signal light to thereby output a shaped signal light;

means for measuring a bit error rate of said output signal light; and

means for controlling a power level of said ~~input~~ signal light before being input to the optical regenerator in accordance with the measured bit error rate to improve the measured bit error rate.

25. (PREVIOUSLY PRESENTED) An apparatus comprising:

an optical regenerator inputting a signal light and shaping a waveform of the input signal light to thereby output a shaped signal light;

means for measuring a spectrum shape of said output signal light; and

means for controlling a power level of said input signal light in accordance with the measured spectrum shape to improve the measured spectrum shape.

26. (CURRENTLY AMENDED) An apparatus comprising:

an optical regenerator inputting a signal light and shaping a waveform of the input signal light to thereby output a shaped signal light ;

means for measuring an eye opening of said output signal light; and

means for controlling a power level of said ~~input~~ signal light before being input to the optical regenerator in accordance with the measured eye opening to improve the measured eye opening.

27. (CURRENTLY AMENDED) A method comprising:~~as in claim 1,~~

inputting a signal light to an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light; and

controlling a power level of the signal light input to the optical regenerator so that a quality measurement of the signal light output by the optical regenerator is improved, the quality measurement being one of a Q factor, a bit error rate, a spectrum shape and an eye opening, wherein said controlling comprises:

controlling gain of an optical amplifier which amplifies the input signal light, to thereby control the power level of the input signal light.

28. (CURRENTLY AMENDED) A method ~~as in claim 17,~~comprising:

inputting signal light to an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring a Q factor of said output signal light; and

controlling a power level of the signal light input to the optical regenerator in accordance with the measured Q factor to improve the measured Q factor, wherein said controlling comprises:

controlling gain of an optical amplifier which amplifies the input signal light, to

thereby control the power level of the input signal light.

29. (CURRENTLY AMENDED) A method ~~as in claim 18,~~comprising:

inputting a signal light to an optical regenerator;

shaping a waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring a bit error rate of said output signal light; and

controlling a power level of the input signal light in accordance with the measured bit error rate to improve the measured bit error rate, wherein said controlling comprises:

controlling gain of an optical amplifier which amplifies the input signal light, to thereby control the power level of the input signal light.

30. (PREVIOUSLY PRESENTED) A method as in claim 19, wherein said controlling comprises:

controlling gain of an optical amplifier which amplifies the input signal light, to thereby control the power level of the input signal light.

31. (CURRENTLY AMENDED) A method ~~as in claim 20,~~comprising:

inputting a signal light to an optical regenerator;

shaping of waveform of the input signal light by the optical regenerator to thereby output a shaped signal light;

measuring an eye opening of said output signal light; and

controlling a power level of said input signal light in accordance with the measured eye opening to improve the measured eye opening, wherein said controlling comprises:

controlling gain of an optical amplifier which amplifies the input signal light, to thereby control the power level of the input signal light.

32. (CURRENTLY AMENDED) A method according to claim ~~1~~2, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

33. (CURRENTLY AMENDED) A device according to claim ~~7~~8, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

34. (PREVIOUSLY PRESENTED) A method according to claim 17, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

35. (PREVIOUSLY PRESENTED) A method according to claim 18, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

36 (PREVIOUSLY PRESENTED) A method according to claim 19, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

37. (CANCELED)

38. (PREVIOUSLY PRESENTED) An optical repeater according to claim 21, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

39. (PREVIOUSLY PRESENTED) A device according to claim 22, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

40. (PREVIOUSLY PRESENTED) An apparatus according to claim 23, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

41. (PREVIOUSLY PRESENTED) An apparatus according to claim 24, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

42. (PREVIOUSLY PRESENTED) An apparatus according to claim 25, wherein the optical regenerator is one of an interference type optical regenerator and a nonlinear optical loop mirror (NOLM) optical regenerator.

43. (CANCELED)